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THE IMPROVEMENT OF LEICESTER.

A REPORT

SETTING FORTH A PLAN PROPOSED BY THE

TOWNS IMPROVEMENT COMPANY,

For carrying out the chief Recommendations of Her Majesty's Commissioners of Inquiry on the Means of Improving the Health of the Population of large Towns and densely-populated Districts ; which are deemed by Dr. SHAW, and J. R. MARTIN, Esq., Surgeon, F.R.S., one of Her Majesty's Commissioners for inquiring into the Health of Towns, and a provisional committee of inhabitants, to be specially applicable to LEICESTER ; viz., an improved system of Works for the Supply of Water, for the Street and House Drainage,—the Removal of all Refuse,—and its application to the increase of Agricultural production.

READ AT MEETING OF THE PROVISIONAL COMMITTEE, AND ORDERED TO
BE PRINTED, WITH ESTIMATES, ETC., AUGUST 19TH., 1845.

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THE WATER SUPPLY, DRAINAGE,
AND
TOWNS IMPROVEMENT COMPANY.

(PROVISIONALLY REGISTERED.)

TO BE EMPOWERED BY ACT OF PARLIAMENT, OR BY ROYAL CHARTER.

Capital, £1,000,000.

To be raised in 20,000 Shares of Fifty Pounds each, with a limitation of the liability of each Shareholder to the amount subscribed. The Capital to be extended as opportunities of beneficial investment are offered. Deposit 5s. each Share, being the amount allowed under the Act 7 & 8 Vict. cap. 110.

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THE LEICESTER WATER, DRAINAGE, AND IRRIGATION COMPANY.

THE recent investigations into the means of improving the health of the population of Leicester, have shown that an improved supply of water, and an improved and complete system of house and street drainage and cleansing, are measures of increasing and indeed most pressing necessity.

It is proved by analysis that the water derived from wells with which the town is chiefly supplied, is charged with sulphate of lime, to an extent which renders it unsuitable for domestic use. Neither is such water fit for various manufacturing processes. The increasing population; the increasing amount of percolation from cesspools, in several parts of the town; and in some instances, the drainage from graveyards; in many cases render the supplies from the town springs highly objectionable, even if the water thus obtained were originally of a good quality. But the combination of these artificial impurities, with the natural bad quality; the labour and inconvenience, and the expense of obtaining supplies by pumps from wells; and, at the same time, the frequent and growing insufficiency of such supplies, occasioned by the continual formation of deeper wells, are evils seriously affecting the health, the comfort, and the domestic habits of the population, urgently requiring an immediate and effectual remedy.

From a survey which has been made by Mr. Hawksley, it is evident that a supply of water, of a superior quality, may be obtained, and carried into every description of houses, at an

expense to the lower class of tenements, below the average expense of the wear and tear of pumps, and the maintenance of wells ; and it may be carried to all other classes of tenements, at a rate below the expense of time and labour consumed in pumping and fetching and carrying water. If these supplies be given upon general agreements, a constant supply of water, night and day, may be carried into even the highest attic of the whole town, at a rate not exceeding threepence per week on an average for all houses large and small ; and to the lowest class of tenements, a supply of forty gallons per diem of filtered water may be delivered at a rate not much exceeding three-halfpence per week. The charge of water-carriers has usually been about a halfpenny per pailful ; but at the rate of charges which it is proposed to adopt, the Company would deliver upwards of 280 gallons of filtered water, to the poorest class of tenements, for three-halfpence ; rendering it simply as a question of distribution and labour of fetching, and irrespective of the superior quality of the water supplied, a saving of expense to any one capable of sewing gloves, seaming, or of doing any other of the lowest-paid labour in the town.*

The rate of charge to the large consumers, would be about threepence per 1000 gallons, or three farthings per ton.

The system which the Company adopt, renders unnecessary the expensive apparatus of butts or tanks, in which water stagnates until it is wanted, and absorbs the soot and dust of the houses and manufactories of the town. The water will be delivered into the houses directly from the distant reservoirs, at the medium temperature of the earth, that is, fresh and cool in summer, and above the average temperature in the depths of winter.

The system of constant supply affords new and important conveniences for private as well as public baths, for washing, for brewing, and for domestic purposes. The system of constant supply at high pressure, also furnishes the only known efficient and, at the same time, economical means for the constant re-

* Evidence of Nottingham Water-works in Health of Towns Commission, pp. 40—47. First Report, vol. i.

moval of refuse from houses, and for the cleansing of streets, drains, and sewers. In those towns where it has been introduced, it has also, as shown in the Reports of the Commissioners of Inquiry into the Means of Improving the Health of Towns, occasioned a reduction of one-half of the previous average losses by fire, and made a corresponding addition to the security of life.*

But the complete attainment of these public as well as private benefits, at low rates of charge, must be dependent on the general support which the measure shall receive from the inhabitants, and the concurrence of the public as to the requisite arrangements for drainage, such as may obtain the sanction of Parliament.

The proposers of the present measure are impressed, from the evidence afforded by recent investigations, with the conviction, that it is the interest of the consumers in the town to pay fairly and generally for the advantages extended to them, on the commercial principle of **LOW RATES FOR ABUNDANT SUPPLIES TO THE WHOLE POPULATION, INSTEAD OF THE COMMON PRACTICE OF HIGH CHARGES FOR RESTRICTED SUPPLIES TO THE HIGHER AND MIDDLE CLASSES OF THE COMMUNITY.** At the same time, the risks of loss, and the future disturbance of the capitalist's investments, will be the best avoided by consulting carefully the wants and conveniences and true interests of the consumers, and by conforming, as closely as practicable, to all such comprehensive arrangements as have been recommended by impartial and competent inquirers.

A fundamental arrangement, strongly recommended for adoption by the Commissioners of Inquiry into the Means of Improving the Health of Towns, is, that the drainage and cleansing of towns and the supplies of water should be united under one and the same management.

In the preamble of the Bill laid before Parliament by Lord Lincoln, the principle of this recommendation is recognised; and there is little doubt that measures will be proposed for carrying it into effect. The preamble sets forth, that it is

* Second Report, vol. i. pp. 404—408.

expedient "that the supply of water for domestic use, and for the cleansing of sewers, drains, houses, courts, alleys, and streets, should be combined as often as may be practicable, with the management of the paving of and the cleansing of the surface of courts, alleys, and streets, and the construction and maintenance of the drains and sewers, and other works subservient to the maintenance of streets and other places in a good and proper condition."

Now the reasons for these recommendations will, on consideration, appear sufficiently strong for voluntary adoption as a commercial measure, independently of the authoritative recommendations which have in view the general public interests.

In most other towns where the water is distributed by public companies, the supply to the private houses has been restricted chiefly to the houses of the higher and middle classes of society: the poorer classes derive their supplies chiefly from common stand pipes, erected by companies. One evil attendant on this mode of obtaining the supply, is the same as that of which the police reports at Leicester furnish continual examples as attendant on the use of the common pump; quarrels and assaults arising out of the desire of numbers to obtain supplies of water at the same time: another evil is, the labourer's wife or daughter having to fetch and carry water in all weathers, cold or wet. The poorest families might well afford the payment of a penny or twopence a-week extra rent, to avoid these disagreements as well as the disagreeable labour. The chief obstacle to the extension of the supplies into tenements, has been the expense of the pipes, cocks, and apparatus for conveying the water into the houses, and of providing sinks and drains for carrying away the waste water.

The quantity of water required for the complete supply of Leicester, it is estimated, on the experience of other similar towns, will be about one million of gallons per diem. When the present defective condition of the sewerage of the town is considered in respect to its means for the drainage and removal of its surplus spring and rain water, (as experienced on the occasion of the storm of 1843,) it appears to be indispensable,

that when such an addition of surplus and waste water as is proposed, is made in the town, provision should at the same time be made, on a scale equally comprehensive and systematic, for carrying it away, without leaving it to the individual householders and owners to make provision, and to contend as they may with the difficulty thus cast on them. The trouble and expense entailed upon each private individual of engaging plumbers and bricklayers would often be excessive, and the apparatus provided might in many instances be costly, unsuitable, defective, and difficult to maintain in repair.*

The Company will be enabled to simplify all such apparatus, and, by providing them on a large scale, to supply them at reduced prices. To overcome the obstacle to the extension of supplies direct to the houses of the working classes, it is recommended by the Commissioners of Inquiry into the Means of Improving the Health of Towns, that the persons providing the main distributary apparatus for water, should be required and enabled to furnish the whole of the branch apparatus, and to provide and maintain the sinks, waste and return pipes, and house drains; and that the necessity of any outlay of capital by the tenants or owners should be done away with, by charging an additional rental. To this recommendation the Company would conform, giving to owners or occupiers the option of selecting any fittings to the apparatus which they might deem appropriate, and also of redeeming the small additional rental by an immediate payment. The advantages of this course are thus adverted to by Dr. Lyon Playfair, in his Report on the Sanitary Condition of the Towns in Lancashire.

“ To reduce these observations to a condensed form, I show the present system and the suggested improvement in a tabular form, introducing, at the same time, the expense for the introduction of water, as detailed at paragraphs 50 to 60.

* Evidence of Mr. Milne, of the New River Company. First Report, vol. i. pp. 104, 105. Also Evidence of Mr. Quick, of Southwark Water Company, pp. 116, 117.

TABLE showing the PRESENT CHARGES for HOUSE DRAINAGE and WATER SUPPLY and the REDUCED CHARGES under the proposed system.

	Old Charge.	Reduced Charge.	Annual addition to the Rent at 5 per Cent. interest, and equal instalment of the principal.
House drain	£4. 7s. 6d.; 30 feet at 2s. 11d. per foot.	Improved pipe drains, 6d. per foot, including repairs; total 15s.	10½d.
Water-pipe and Apparatus.	£4. for butt, ball, cock, and other apparatus.	For a pipe only, the butt being dispensed with by the introduction of a constant, instead of intermittent supply, 6s. 6d.*	5d.
	£8. 7s. 6d.	£1. 7s. 6d.	1s. 3½d. yearly, or ½d. weekly.

“ By this illustration, it will be seen, that instead of at once demanding £8. 7s., as on the present system, the demand will be for 1s. 3½d. annually, or for ½d. per week; but, if the owner prefer immediately to pay off the cost of improvement, he will be charged £1. 1s. 6d. instead of £8. 7s.”†

The Company further propose to undertake the watering of the streets to lay dust, and the cleansing of the foot-pavements, in the summer time; and by the street-cleaning machine, with the assistance of jets of water, to remove all mud and filth in the winter. The Company would be enabled to effect this street-watering in the summer time, and the complete cleansing, winter as well as summer, for a rate of one penny halfpenny weekly per house. The saving of furniture and goods from dust, and of clothes from mud, and the reduction of the expense of washing, will make this outlay for street-cleaning the means of saving money, as well as of increasing the comfort and salubrity of the town.

But there is another point of view in which the arrangement will be advantageous, to an extent that will in most cases reimburse the payment of half the water-rate for a constant supply

* Average of Preston and Oldham v. s. 9—14. Health of Towns Report, vol. i. Average Manchester and Salford v. *idem*.

† The calculation for the drain charge does not include the charge for digging and laying.

of water at high pressure, viz., as an insurance charge for a means of preventing fires.

Leicester has hitherto been highly fortunate in the small number of fires that have taken place; but the increase of new buildings and factories adds to the probability of future calamities by fire, such as have afflicted other towns, unless timely precautions be used.

In Philadelphia and in other towns where the constant supply of water is maintained, it is found of great advantage to have an apparatus in common and daily use, such as the hose and street-cleansing apparatus, that may be at once applied to the extinction of fires. On the occurrence of a fire, or in one minute after an alarm, a hose may be got, fixed to the street plug, and at once brought to bear upon the fire before it gets a head. But under the best of our common arrangements, an engine has to be sent for to a distant part of the town; and, supposing the engine to be in a good working condition, which it seldom is in towns where it is seldom used, and supposing, moreover, that when it arrives, a full supply of water is in readiness, the fire has had fifteen or twenty minutes' time to rage, and even in the metropolis, where the arrangements of fire-engines are the most perfect, in the majority of instances, all that remains to be done by the fire-brigade, is the protection of the adjacent premises.*

The experience in some of the towns of England where the improved means of water supply have been adopted, are thus stated by Dr. Playfair, in his Report of the Sanitary Condition of the Large Towns in Lancashire.

"Now for £2 plugs can be fitted up, so as to screw on two hoses to each, and thus to furnish two jets; or, in other words, for the sum of 5d. per annum, each house in the town may be supplied with arrangements for the extinction of fire, equivalent to four fire engines constantly kept at its door for its exclusive use. The experience at Oldham amply confirms that at Preston. Mr. Emmott, the manager and engineer of the Oldham Water-works, describes the practice in that town in relation to fires—

* First Report, vol. ii. p. 132. Second Report, vol. i. pp. 404—408.

“ In five cases out of six, the hose is pushed into a water-plug, and the water thrown upon a building on fire, for the average pressure of water in this town is 146 feet ; by this means our fires are generally extinguished, even before the heavy engine arrives at the spot. The hose is much preferred to the engine, on account of the speed with which it is applied, and the readiness with which it is used, for one man can manage a hose, and throw as much water on the building on fire, as an engine worked by many men. On this account we very rarely indeed use the engines, as they possess no advantage whatever over the hose.”

He shows, moreover, that where this system has been in action, that the losses have been reduced more than one-half. The value of this reduced insurance risk, on 12,000 houses, including factories, for Leicester, calculated upon the data furnished by the experience of Manchester, would be about £3000 per annum.*

Now out of the proposed charge of three-pence weekly, if *all* the houses pay, one halfpenny or even a penny per week would, to the poorest family who have property to lose, be a low value to set upon the peace of mind arising from the security of having so immediate and certain a relief against the spread of conflagration. The rejection of the security attainable without any additional charge would denote a degree of ignorance and indifference to calamity amounting to barbarism.

At Nottingham, the system of the constant supply of water is getting into use for watering gardens. On the scale of charges proposed, 1000 gallons may be delivered by the jet for 3*d.*, which is equal to a shower of rain $\frac{1}{8}$ th of an inch deep per acre. It will be available for suburban gardens, and for fountains, as well as for baths. In various other ways it will admit of many useful applications.†

The necessity of the free use of water for house cleansing and for water-closets and soil-pans, the use of which in other places is rapidly extending from the middle to the lower class of houses, need not be pointed out. It is proposed to include this service in the water-rent. The necessity of the full and free use of water, for flushing house-drains and sewers, and imme-

* *Vide* Second Report, vol. i. p. 485.

† *Vide* Evidence of Mr. Hawksley, First Report, vol. ii. p. 65.

dately removing from under the sites of habitations all foul and decomposing matter, forms one of the chief grounds of the necessity of the combination of the water supply and drainage, insisted upon by the Commissioners of Inquiry into the Means of Improving the Health of Towns, and which cannot be foregone, except upon narrow and erroneous views of immediate and more convenient profits from the water supply alone, regardless of the necessities and conveniences of the population.

There are, however, many streets in Leicester, into which supplies of water may be taken, where not only are there no proper house-drains, but no proper culverts to receive and convey away the waste water and refuse from the house-drains.

This opens the next, if not the greater sanitary evil,—the want of an efficient system of sewerage.

It is now established by extensive evidence, that no town is or can be healthy, where there is not a complete system of sewerage, and where the site is saturated with the soakage of cess-pools.

In Leicester, the streets are wide, the houses of the labouring classes are not crowded closely together, as at Nottingham and other towns, they have more of open-grounds attached, but it is on the bottom of a large flat saucer, and the great defect which depresses the health of the population is, its want of proper drainage. The flow in those streets which are culverted, is sluggish, and the sewer water gives off injurious emanations; the refuse of the town is either collected in cesspools, and saturates the substratum, or it is slowly delivered into the river, which is dammed up by mill weirs, and there it stagnates. The condition of the river water, from its increasing pollutions, is denoted by the fact, that, twenty years ago, it yielded a good supply of fish; but now fish are only to be found at a distance of several miles from the town. The emanations from this stagnant pool, from the imperfect culverts and drains, and from the cess-pools and other sources of pollution, are often, when the wind is low, retained by the hills which form the edge of the saucer, at the bottom of which the town is situate. Yet the drainage of the houses, and the partial relief

of the basements, by culverting, have hitherto been attended with such remarkable effects, (as shown by Dr. Shaw in a paper which he read before the Philosophical Society, and confirmed by the observations of the Health of Towns Commissioners,) in the superior general health of the people living in the culverted streets, as to give very high promise of the effects of a general and complete system of drainage. For the most part there was very little difference in the condition of the inhabitants, excepting their living in streets which were culverted, and in streets which were not culverted ; yet the difference in duration of life, verified by the local observations of Dr. Shaw, was as follows :—

COMPARATIVE MORTALITY in the DRAINED and UNDRAINED DISTRICTS
of the TOWN OF LEICESTER.

Streets.	1840		1841		1842		Average age of death for the three years.	Total proximate loss of life in the undrained districts.
	Average age at death.	Proportion at deaths.	Average age at death.	Proportion at deaths from Epidemics.	Average age at death.	Proportion at deaths from Epidemics.		
East District.	Years.		Years.		Years.		Years.	Years.
Culverted.....	23 $\frac{1}{2}$	$\frac{1}{4}$	24	$\frac{1}{12}$	26 $\frac{1}{2}$	$\frac{1}{12}$	24 $\frac{2}{3}$	
Partly culverted	17 $\frac{1}{2}$	$\frac{1}{2}$	21	$\frac{1}{9}$	21 $\frac{1}{2}$	$\frac{1}{9}$	20	4 $\frac{2}{3}$
Not culverted ..	13 $\frac{1}{2}$	$\frac{1}{2}$	18		17 $\frac{1}{2}$	$\frac{1}{7}$	16 $\frac{1}{3}$	8 $\frac{1}{2}$
West District.								
Culverted.....	20	$\frac{1}{6}$	30	$\frac{1}{12}$	29	$\frac{1}{12}$	26 $\frac{1}{2}$	
Partly culverted	21	$\frac{1}{5}$	23 $\frac{1}{2}$	$\frac{1}{9}$	22	$\frac{1}{11}$	22	4 $\frac{1}{2}$
Not culverted ..	14 $\frac{1}{2}$	$\frac{1}{4}$	21	$\frac{1}{7}$	17 $\frac{1}{2}$	$\frac{1}{9}$	17 $\frac{2}{3}$	7 $\frac{1}{2}$
Total of—		The 3 years average						
Streets culverted	25 $\frac{1}{2}$							
Partly culverted	21	21 and rather more.						
Not culverted ..	17							

{ These years were taken because the year 1840 was remarkable for the increase of disease, and the number of deaths throughout the Town.

Here we find the extraordinary amount of seven or eight years' loss of the average duration of life in the undrained, as compared with the drained districts !—an effect confirmed by the experience of other places. This instance has been fully canvassed throughout the country, and it is hoped, and confidently proposed in the present plan, that Leicester may be rendered as

conspicuous an example of efficient remedial and preventive measures, as it is at present one of the evil of defective drainage. The great difference of the rate of mortality, in the drained and undrained districts, there is no doubt, is accompanied by some proportionately greater rate of sickness in the worst-drained streets. Whilst the occupiers of the ill-drained districts sustain great suffering, loss, labour, and expense from this excess of sickness, the owners of the premises have to bear the frequent losses of rent from poverty, arising from inability to work and to earn wages during sickness, and they have moreover to bear the expense of dilapidations arising from the decay produced by damp, and the losses from frequent removals arising from discomfort; whilst the occupiers who escape attacks of sickness, have, in addition to the discomforts of the damp, to sustain its effects on clothing and furniture, or are put to the expense of an extra amount of fuel requisite to keep their houses dry and warm.

The Company may abate this evil in two modes, that is to say, by a partial or by a complete system. It may obtain powers to form culverts down the streets which are yet unculverted, and to charge a rent on each house which uses the culvert. This is the mode which has been resorted to at Cheltenham, which is partially drained on this principle by a joint stock company, and practically a fair return is obtained from these rents for the capital invested; or the Company may seek powers to carry out a new and complete system of drainage of the town, for such a general and fair return, and under such mutual securities, for the capitalists and the townspeople, as Parliament may sanction.

Under the partial system, the Company must require for its fair remuneration, a rent per house, nearly double that for which it might undertake to effect the general and complete drainage of the whole town. The Company will undertake to lay down an improved and complete system of drainage, on the security of the highway rates; and engage to execute them as cheaply as any such works could be done by any available agency of the rate-payers, and much more cheaply

than such works have hitherto been executed, by any public body, or probably would be by any body, of unpaid and changing public officers of any party, however respectable. The expenses of the management and the failure and mismanagement of public works undertaken by such bodies, are always unavoidably great ; and have seldom been less than twenty per cent. on the outlay, the great proportion of which the Company would certainly in this instance save to the town.

The Company will submit their plan of drainage to any competent engineer in whom the corporation, or the surveyors of the highways, may have confidence, or, to any competent officer hereafter appointed by the Government for that purpose, and will, on fair terms, from time to time, extend and vary its application of the system of drainage, with the increasing wants of the population. They will guarantee the formation of an improved and complete system of street culverts and their maintenance, in complete action, for a term of thirty years, at a rate, which shall not exceed, on the average, a charge of twopence per house weekly, and which would, for the poorer description of houses, not exceed one penny weekly.

The Commissioners of Inquiry into the Health of Towns, in their last Report, set forth, as one of their chief recommendations, that all such works as those for drainage and the supply of water, should, as far as practicable, be executed on contract ; and they state, that " an additional security will be given if such works, especially those constructed for the supply of water, be maintained and kept in good repair for terms of years on contract by the parties by whom they may have been executed, whose interest would thus lead them to make good and sufficient works in the first instance.

" Thus in contracts for the supply of water to houses, an eligible form of contract would be for the maintenance of a given rate of supply for a term of years, leaving to the contractor the choice of apparatus. If the contractors have a fair liberty, as to the means, and a share of the first benefits of new improvements, such improvements will be soon made and rapidly carried into execution to the public advantage. Many of the works are, however, too large for single contractors, and it appears

desirable to give facilities for the execution and maintenance of such works by public companies, as lessees or contractors for terms of years, with liberty of redemption by the public upon terms previously settled. We are informed that such works would frequently be executed and maintained, and all risks undertaken, upon such terms as a *guaranteed* profit of six per cent. on the outlay. When money has been borrowed, the usual market rate of interest for such investments has hitherto been four and a-half or five per cent. An addition of one and a-half per cent., for which a company would often undertake the maintenance and execution of such works, would be cheap, as compared with the risks of mismanagement by local boards, composed of persons having no professional skill, and liable to be misled as to the materials and magnitude of the proposed works, as well as to the numbers of officers requisite to maintain them. It might be difficult to ensure that a local body should be so constituted as to give the same constant attention to economy in the expenditure of other people's money, that contractors would do in the expenditure and management of their own."

The General Towns Improvement Company has been associated to give local aid, and is ready to meet the conditions thus recommended, and in exchange for the ineffectual check of wasteful competitions of double and often treble capitals and establishments in the same fields of supply, to give security to the town, by submitting to any properly constituted and impartial supervision, and enter into contracts for these works or services, renewable with altered conditions at the expiration of defined terms of years.

With the aid of a staff of engineers of extensive and varied practice, and distinguished by having effected successful improvements, the Company may undertake works with perfect confidence that they can secure to the consumer an efficiency and economy which cannot be obtained through the medium of persons whose experience is limited to their own districts, or who are habituated to imperfect works, and modes of management which the public wants require to be amended or superseded.

The neglect of distant experience in the formation of such

works as those in question, is frequently attended by a double outlay, and as a consequence, either half returns to the capitalists, or, as is more commonly the case, double charges upon the consumers for insufficient supplies.

The Company will certainly be able to carry out the improvements in question much more cheaply than they could be carried out by immediate taxation to raise the requisite capital, were that practicable to any extent on the inhabitants themselves. All immediate outlay for such purposes levied from retail dealers, is levied from a capital, which, to enable them to live and pay rents, must generally produce a profit of twenty per cent., and if from the capitalist or the wholesale manufacturer, ten per cent. Instead of thus diverting capital from more advantageous pursuits, the Company will provide the requisite amount, and be reimbursed by a moderate per centage upon their outlay.

With the support of the town, it appears to be practicable to attain the great objects recommended by the Commissioners of Inquiry,—viz., a perfect supply of pure water, and a complete system of house and street and main Drainage,—without multiplying officers, without the creation of new and expensive establishments, and without multiplication of the elections, or any consequent increase of the social evil of party feeling.

But what is of far greater moment, the Company will, if their set of measures, proposed by the most competent and impartial inquirers, be adopted, save not less than one year's delay in the constitution of a new body, and probably another year's delay in instructing it and setting it to work, and they will thus save at the least one year's excess of mortality. They will save the risk of general legislation, not applying so closely to Leicester as this measure, founded on a careful local survey and consideration; and they will insure the execution of a more complete measure than that proposed, which, from the difficulty of providing for all places, contains no distinct provisions for the application, by the same machinery, of the refuse of towns to agricultural production; and moreover, they will save the

risks of the execution of the best devised law, arising from the election of changing bodies of men, with uncertain qualifications, and limited means of instruction or guidance to carry out new works. The Company will rest their claims to legislative sanction to their undertaking upon any examination of competent engineer officers, that they carry out at once the main works which the Commissioners of Inquiry have recommended as necessary, and that they carry them out on as fair and liberal terms as any body of public trustees might be expected to award to respectable contractors, who find the capital and the requisite skill, and undertake the risks of its application.

For a payment of threepence per week, then, the Company would carry improved supplies of filtered water to every house, and for three-halfpence a-week to the families occupying fifty-seven per cent. of the houses: for a like sum every house may be drained, and the refuse carried away: and for a penny-halfpenny per week per house or per family, the foot pavement and the roadway may be kept clean by sweeping with the machine and washing with the jet. By these works, and at these charges, all refuse will be carried from the houses and streets,—and so far great improvements will have been attained.

We now come to the consideration of another and combined branch of the plan of improvement, by means of works which are proposed to be undertaken and managed, as a necessary part of the same plan, but without rent or charge to the town, and on entirely distinct grounds. By the works described the refuse will still be carried no farther than to the stagnant river, where it pollutes the water, and becomes a source of injurious emanations—less injurious, it is true, than when decomposing immediately under living rooms, and in the streets before them, where, on opening the window, the occupiers receive the effluvia of horse-dung or other filth; but stagnant water of *any* kind is injurious, and it is the more injurious in the proportion in which it is polluted by such matter as the excretæ of a town.

Any measure of drainage would be incomplete which did not provide for the removal of the refuse of the town without polluting the river; and it cannot be expected that the refuse will

be farther removed, (except at an enormous expense, which the town would not bear,) unless it can be applied so productively as to pay for its removal.

Extensive practical experience in the application of such refuse to agricultural production has been consulted, and the Company propose to construct works, to divert the sewer water from the river, as early and as extensively as fields for its practical application are obtained. The experience of Edinburgh, Milan, and other places, enables the Directors to assure capitalists that the return for the application of the sewer water, will repay them for the risks and the expense of constructing the necessary works, for pumping it out and conveying it in the direction of demand.

From some experiments made last year in Lancashire, which were stated to the Royal Agricultural Association, by Dr. Lyon Playfair, it appears that eight tons of sewer water per acre was found to be superior to fifteen tons of farm-yard manure, costing four shillings per ton, and to three cwt. of guano, costing eight shillings per cwt.: the experience of the expense of distributing sewer water when raised by steam-power, and carried over the land in pipes and hose, leaves no doubt of the practicability of delivering and applying to the land the town manure in the most effectual form—the liquid form, with a very good profit to the Company, and yet at a price greatly below that which the farmer pays for the cartage of that same quantity of manure to his farm, and even at no greater expense than is incurred in spreading manure when obtained.

Some of the most able and extensive agriculturists near Leicester have been consulted, and they have acknowledged the advantage which they would derive from the proposed supplies of the liquid manure when conveniently delivered, and their readiness to avail themselves of them, at a reasonable price.

The extent of demand, distinctly indicated, for the improved manure, enables the Committee to express a confident opinion as to the success of this part of the plan, and very early to obtain at least as high a rate of return as that anticipated from the distribution of water even at the low charges at which it will be delivered.

The corporation and the freemen's estates may be supplied with liquid manure at a very low rate of expense, and great increase of their fertility. The mode of manuring with liquid manure, by pipes carried under the roads, and spread by hose upon the lands—thus dispensing with the inconvenience, as well as the expense, of cartage,—possesses great advantages for garden cultivation; to which the miscellaneous nature of the liquid manure of towns is peculiarly favourable. In time of drought, the pipes for the distribution of liquid manure will be available for watering the lands with common water, which may be delivered at the rate of threepence per 1000 gallons.

Upon due consideration of the facts already stated in respect to the condition of the town, and the means of its relief from the constantly increasing causes of disease and premature mortality, assent will be given to the correctness of the conclusions enunciated by the Commissioners of Inquiry; that the whole of the apparatus for the distribution of water (including the most eligible sources of supply) forms a part of one machinery, and that to allow possession to be taken of that one part, by separate authorities, irresponsible for joint action, must do as it always has done,—derange the operations of the whole. A company, as commonly constituted, which has possession of the most eligible sources, will make—as every company has done—"the most of its advantages." It will, beyond the fair remuneration for the capital invested, and for the service of distribution, and management, exact high charges; or else it will be unaccommodating, and too commonly obstruct, if it do not directly thwart, all arrangements from which it has not the promise of a high and immediate pecuniary benefit. This want of unity is the source of disputes with other bodies, and the cause of the defectiveness of the detailed arrangements, of which the disastrous consequences are experienced on the occurrence of fires. It is stated that from this cause, and the disputes with the separate water establishments, Liverpool has been put to an enormous expense, of probably one hundred thousand pounds, to provide separately for supplies of water to extinguish fires. In the supply of water for domestic use, the special exactions for meeting incidental

conveniences and wants are found to be preventive of very important improvements. One example of this is the common practice of the old water companies in the metropolis to charge specially, as “a high service,” for the convenience of carrying water to the upper rooms of houses, although it is proved that the difference of the expense of pumping, whether water be delivered at the basement floor or at the highest attic, is not more than four-pence or sixpence per annum for each house of a town.* Another example is the common practice, of a most noxious effect, of charging as much for supplying water for a water-closet as for the whole of the supply for one or even for two houses of the third or fourth class.† To some extent, it is true, these exactions may be said to be consequences of the defective arrangements in other towns, such as the want of house-drains in the poorer districts, which restrict the supplies to the houses of the higher and middle classes, from whom therefore, it becomes necessary to the company to exact by all means the returns for their establishment charges, and the payment of interest, which would fall but lightly, if diffused equally by a fair general rate. Both the particular charges last adverted to, the Company propose, with the public aid, to abolish entirely.

The fact should, however, be deeply impressed on the minds of the inhabitants, that it is highly to their interest, for the protection of their health, as well as for the general comfort, as foreseen by the Commissioners of Inquiry, that the supply of water and the machinery for its distribution, should be in the hands of those, and those only, who have an interest in applying it abundantly for the immediate removal of all decomposing refuse. Such an interest is constituted by the proposed privilege of applying the refuse to agricultural production. Without combination with the water supply, and without a powerful motive to its application, the extension of house and street-drains may be in Leicester, as it has been in the Metropolis and many other towns, only an extension of the cesspools, and the means of diffusing more widely, offensive and pestilential emanations into the streets. An example of the failure of even an

* Vide First Report, vol. ii. p. 34.

† Vide First Report, vol. i. p. 328.

abundant distribution of water, to effect one of its most important objects, when carried out as a single and separate measure, is thus stated in a letter to Mr. Chadwick, written by a medical gentleman of high attainments, resident in New York :—

“ The necessity of the harmonious action of the various means which conduce to a given end is continually exemplified when we attempt to gain such end by any number of means less than the correlated whole. An illustration of this we have in the city of New York, which I have watched with much interest. The insufficient supply of water, and its ill qualities goaded the citizens into the magnificent undertaking of bringing the River Croton into our city from a distance of forty miles. That is accomplished, and we have now great abundance of pure water. This abundance has led to its profuse use in sweltering summer days, in watering the streets, by means of the hose of private citizens. To understand the evil of this seeming good, it is necessary to state that, notwithstanding ‘city ordinances’ of most stringent ‘words,’ it is customary to throw refuse vegetables and other garbage into the streets. The evil of this uncleanly practice was but partially developed before the use of the Croton. Under our fierce sun the garbage soon became dry, and comparatively harmless, but now it is soaked hour after hour, as fast as it shows an approach to dryness, and is thus kept incessantly fermenting and putrefying, to the great annoyance of delicate olfactories and the deterioration of the common air.

“ Then again the city, with probably the best natural advantages of any large city in the world for perfect drainage, is drained very imperfectly. Before the introduction of the Croton, the inhabitants had to obtain their supply of water from wells sunk in all parts of the city,—the continual pumping from which kept the ground well drained, notwithstanding the universal use of cesspools and privies, but now, for lack of drainage, many sub-cellars have become covered with water, and a great number of basements and cellars have become damp. I am satisfied that the citizens will be constrained in self-defence to become more cleanly in their streets, to resort to a thorough system of sewerage, to connect waste pipes, or small sewers, with the street sewers, instead of using cesspools, and to introduce water-closets communicating with the sewers, in place of the disgusting system of open sinks, now in general use. When these measures are adopted, the sanitary means conducive to cleanliness will be in harmony, and then, and not till then, shall we reap the full advantages of even the pure and copious Croton River. Indeed, until these correlative measures are adopted, our abundant supply of water will conduce to many positive injuries.”

This last example appears to be peculiarly applicable to some of the lower parts of Leicester; and the Company would not only aid, but must feel it a duty to acquaint the inhabitants with the grounds for withholding their sanction to any such imperfect measures.

It appears then that the Company may, if properly aided, effect the following objects with advantage to the town, and with a reduction of existing charges to the townspeople, and with a fair return for the labour and skill employed and risk of the capital invested.

That it may, at less than the common existing charges, substitute, for the present impure and objectionable water, a supply of filtered water, carried into every tenement for domestic use, for cleansing and for household purposes.

That it may drain private houses, and apply the increased supplies of water to the cleansing and flushing of house-drains and culverts, to the cleansing of foot-pavement and roadways, and the washing of fronts of houses.

That it may keep on such supplies night and day for the extinction of fires.

That it may apply the refuse of the town, beneficially to agricultural production, and especially to the increase of the produce of the lands and gardens in the vicinity of the town.

Having attained these objects, and accomplished the effectual drainage of the town, and laid down a system for the immediate removal of all refuse from amidst habitations before decomposition can have gone on, the Company will have achieved the removal of the chief source of atmospheric impurity, by which it appears the general health of the population is depressed.

And here it may be proper to revert to the mere money losses involved in the depression of the public health, as claims for co-operation with the Company, independently of the higher grounds, the prevention of sickness, the diminution of pain, and premature deaths.

In whatever mode the excess of sickness and mortality in Leicester be estimated, it appears to be an immense source of money loss beyond any conception of the inhabitants, even from the results stated of recent public inquiries. To take an estimate deduced from the experience of one year, the year 1842, as given in the last Report of the Registrar-General. The annual mortality, and the births, reducible to appreciable standards, will be found set forth in the annexed table.

It appears that during that year, there were no less than 1457 deaths in Leicester, being in the proportion of one death to every thirty-five of the population, and that the average age of all who died was only twenty-four years and three months. Even in London, the proportion of deaths is one in forty, and the average age at death, twenty-nine years.

It has already been shown by returns of deaths in the streets culverted, and in those not culverted, inhabited by a population not differing materially in condition, that the partially drained and culverted streets enjoy a marked advantage over the others, in respect to the amount of mortality; the age of death in one set of streets being, on the average of three years, twenty-five years and a half; and in the streets not culverted, seventeen years.

Though the whole of this excess of mortality may not be removable by drainage, much, perhaps being ascribable to defective ventilation and circumstances which do not come within the range of any such measures as those under consideration which may be carried out by a company, yet on the experience of various other places it is evident that a very large amount of that excess will be prevented by effectual house and street draining and cleansing, alone. There appears to be no sufficient reason for not believing that it is within the reach of practical measures to bring the health of the population of Leicester up to that enjoyed in Billesdon, and Market Harborough, and Melton Mowbray.

Now what is the loss of health and life in Leicester, as compared with the loss of life experienced in the Billesdon district, —a district not freed, as many public establishments are, from the ravages of epidemics, and therefore not affording a very high standard?

According to investigations, founded on the largest experience, the proportions of the deaths of infants to the deaths of adults, are the best tests of the sanitary condition of a population, because infant life is the most dependent on atmospheric purity, because the infantile mortality is the least affected by the migration, or emigration, or the occupations, of the adult population.

Now it appears, from the Registrar-General's last annual return, that whilst out of every hundred children born alive, at Market Harborough and the surrounding district, twelve died within the year of their birth, at Leicester, no less than eighteen died within the same period.* And this increased rate of mortality at Leieester, is made up by an inereased rate of births.

If the deaths at Leieester had during that year been in the same proportion as in the Billesdon distriets, there would have been 351 deaths fewer; if the rate of births had been at the same rate as in the Billesdon district, there would have been 518 births fewer to make up the defieieneies of the inereased rate of mortality. In the Billesdon and Market Harborough district, the average age of all who died was thirty-six years and three months, and the average age of all the adults, that is, above twenty, who died during that year, was fifty-nine years and ten months, or near three-score years; whilst in Leieester, the average age of all who died was twenty-four years and three months only; and of all who died above the twentieth year, only fifty-one years and nine months. Upwards of twenty-six per cent. were cut off in the prime of life before the natural and insurable term, as aseertained in the adjoining distriet, that is to say, between twenty and sixty years of age. One with another, each adult who died during that year, lost eight years and one month of healthful life and working ability, as compared with the durations of adult life in the Billesdon district. The loss of life to each individual in Leicester is, therefore, not less than twelve years; in other words, supposing that the same proportionate rates of mortality obtained in Leieester as in the Billesdon districts from year to year, as there is every reason to believe they would, then the duration of life to every individual born and reared in Leieester is one-third less than it would be.†

* On a recalculation it appeared that, in respect to the *infantile* mortality, the Billesdon district was the second and not the first in the shire: but it was not deemed worth while to recast the whole table on that account, especially as the most important point of comparison was the extremes of adult mortality.—Vide Second Report, vol. ii. p. 79.

† Another year's mortality has been examined by Mr. Chadwick, and the results confirm those in table given.

DEATHS and BIRTHS in the REGISTRATION DISTRICTS of LEICESTERSHIRE, during the YEAR 1841, with a comparison of the Mortality in the Town of Leicester, with the Mortality in one of the most healthy Districts of the Shire, and a Proximate Estimate of the money losses in Leicester, consequent on its excess of Deaths.

Excess beyond the loss of life experienced at Billesdon, Market Harborough and Melton Mowbray, preventable in each District.

Registration Districts.	Total number of deaths in each district during the year 1841.	Total number of births in each district during the year 1841.	Proportion of deaths in 1841 to the population in each district.	Proportion of births in 1841 to the population in each district.	Proportion of deaths of infants under 1 year to the births in 1841.	Proportion of deaths from epidemics in each district, in 1841, to population.	Average age of all who have died in each district.	Proportion per cent. of deaths, at each interval of death, to total deaths in each district.												Excess in number of	Years' loss of life to	Total loss on the year's deaths in	Approximate proportion of life lost by each person.									
								Under 1 year.	Under 5 years.	Under 15 years.	Under 20 years.	Between 20 and 30.	Between 30 and 40.	Between 40 and 50.	Between 50 and 60.	Between 60 and 70.	Between 70 and 80.	Between 80 and 90.	90 and upwards.	All deaths.	Deaths of adults.	Births.										
Market Bosworth and Ashby-de-la-Zouch ...	670	1331	1 in 56	1 in 28	1 in 9	1 in 511	yrs. mos.	23·3	35·7	42·6	47·4	7·2	7·3	5·5	6·7	7·5	10·3	7·2	·9	79*	78*	251	yrs. mos.	£.	2212†	£.	395	£.	19360	16753	1·9†	
Billesdon, Market Harborough, & Melton Mowbray (for the years 1840-41)	825	1216	50	34	8	364	34 9	60 1	18·7	32·6	41·2	45·3	6·8	6·9	4·8	4·6	8·5	11·5	11·0	·7				4 5	2 10	·55	26	700†	125†	12740	11915	1·20
Lutterworth, Hinckley, and Blaby	871	1387	52	33	7	432	34 9	58 6	23·1	32·4	39·8	43·7	7·2	5·7	5·1	7·5	11·1	12·7	5·9	1.	25*	26*	93	1 9	1 4	26	78	5096	910	35256	41262	2·7
Loughborough and Barrow-on-Soar	1072	1409	41	31	6	185	26 0	55 10	22·8	42·9	54·3	57·2	6·3	6·4	4·7	4·8	6·3	8·0	5·5	7	182	52*	145	10 3	4 0	158	78	9828	1755	91482	103065	1·3‡
Leicester	1358	1972	38	26	6	195	24 3	51 9	26·1	43·3	53·0	57·4	8·0	5·0	8·0	5·7	7·0	6·0	2·7	·3	351		518	12 0	8 1	158	12012	2145	158838	172995	2·9	
Total	4798	7293	46	30	7	271	29 8	56 4	2·30	37·9	46·9	50·9	6·9	6·3	6·0	6·0	8 1	9·3	5·8	·7	429	156*	1007	8 0	4 5	86						
Average.....																																

Total number of adults prematurely dying 1207, or to every 10,000 of the population 55

Number of all classes killed by epidemic, endemic, and contagious diseases ... 812, „ „ „ 37

Deaths of all classes from diseases of the respiratory organs 1338, „ „ „ 61

* Diminution.

† Gain: i. e. if the mortality had been at the same rate as in Leicester, they would, at Market Bosworth, have had to pay £395 more for funerals, and £2212 for the relief of sickness during the year.

‡ The loss of life being one-third greater at Leicester, the charge there for insurance against sickness and mortality ought to be one-third higher according to this year's proportionate rate of mortality than at Billesdon.

Leicester district.	Billesdon district.	Leicester district.	Billesdon district.	Leicester district.	Billesdon district.
Proportion of deaths to the population of 1841 { 1839 1 in 39 1840 1 in 29 1841 1 in 38 }	1 in 57 1 in 52 1 in 51	Proportion of births to the population of 1841 { 1839 1 in 25 1840 1 in 25 1841 1 in 26 }	1 in 34 1 in 34 1 in 35	Proportion of marriages to the population of 1841 { 1839 1 in 1840 1 in 1841 1 in 96 }	1 in 1 in 1 in 155

* The summaries of the marriage registers for these years have not been made up.

The ordinary consequences of the more rapid marriages, increased births, and greater mortality at Leicester, a greater proportion of young and dependent children, lower age of the living population, and smaller proportion of persons above three score years of age, are shown in the following abstract of the census return of the ages of the living population in 1841.

	Average age of all alive	Average age of all alive above 20.	Number living out of each 10,000 of the population.								
			Under 5.	Under 10.	From 20.	From 20 to 30.	From 60 to 70.	From 70 to 80.	From 80 to 90.	From 90 upwards.	
Market Harborough and Melton Mowbray. }	26 0*	40 1	1276	2430	3538	1754	488	226	42	3	
Leicester	25 7	39 2	1324	2452	3512	1851	420	175	33	3	

* A large proportion of adults emigrate from the healthy rural districts, to supply the greater mortality of the town districts, so that the average age of the living population in the healthy district appears to be lower; and in the unhealthy districts higher than is really due to the locality.

Here again let it be considered, that for a payment of about three pence weekly for each house of the description usually occupied by the working classes, the Company will undertake the complete house drainage and supply of water, by which one of the chief causes of the difference in the sanitary condition of the two districts may be removed—a difference of the effect of which we have practical proof in the wide difference of the ages at death already adverted to in the culverted streets as compared with the non-culverted streets.

Now as the money payment is the chief objection to the immediate and general voluntary adoption of the measures proposed, let us see what is the present cost of sickness and mortality as an existing and inexorable tax, which tax the proposed improvements will serve to reduce.

Taking the case of the adult inhabitant, assuming the weekly wages of the male to be 10s. and of the female 5s. or say an average of 7s. 6d. per week; every adult who has been, as is shown upon the year's mortality, every one who will be cut off, as all must calculate on being cut off in the like proportion, if no amendment be made, will have lost eight years of life, which, to his family and to the community, will have been the profits on eight years of productive labour at 7s. 6d. per week, or on a total sum of one hundred and fifty-eight pounds per individual.

Let us look at these losses in the aggregate. The loss of productive labour, from the cases of premature death, during one year, will have been, on the estimate we have taken, not less than £91,482.

But the excess of mortality will have been accompanied by an excess of sickness, which, on data furnished by the experience of benefit societies,* could not be provided for by a less sum than £9,828 for the year,—an entire money loss on this one item alone, greater than the annual payment for the most effectual works of prevention.

Taking the average expense of the funerals to be £5 each, the average allowance of benefit societies, which will be below

* Second Report, vol. i. pp. 447, 449.

the real expense, we have, from the year's excess of 351 deaths, a charge of £1755 for funerals.*

From these three items,—lost labour, excessive sickness, and funerals,—we have a year's tax upon Leieester of upwards of £100,000, occasioned by an excessive mortality.

This estimate, however, takes no account of the widowhood and orphanage consequent on the adult deaths, chargeable, either upon the poor's rates or upon families, nor of the excess of 500 births, which, by a mysterious law, makes up the losses from the excess of deaths; and whilst it condemns the apathy to human suffering involved in the selfish disregard of measures of prevention, defeats the calculations of that selfishness. Let the table, herewith presented, be examined as it may; let every allowance be made for the imperfection of the present registration; take one-half, or one-third, or even a tenth, of the money account stated, as the set-off against the measures of drainage and water supply proposed to be carried out, and abundant grounds will be apparent for the claims of the Company to public and private co-operation. The annual money return which they seek for large and efficient measures of prevention and comfort, will be found to be vastly below the rigorous annual taxes imposed by the preventible excess of disease and mortality.

It might have been sufficient merely to advert to the advantages of the proposed improvements to the health, comfort, and morality of the population, as cogent motives to hearty co-operation, while the pecuniary interests of the consumer are also benefited; it is however, strictly on the basis of profitable investment that the Company is founded, as the only one on which those advantages may be expected to be rapidly, economically, and completely realised to the whole community, or that the capital can be justly expected to be raised, and science applied to the works in question; all of which, it is now proved, must, when completely carried out, effect large reductions of various existing money charges, to landlords as well as to all classes of tenants to the very lowest.

There are, on principle, fundamental objections to gratuitous

* Supplement to the Sanitary Report: Practice of Interments, sect. 55, p. 57.

benefits, and the labouring classes are rarely, if ever, eventually benefited by them. Prosperous times and high wages, which necessitate close confinement, it is proved, do not avert the noxious effects of damp ; and bad water, defective drainage, and filthy houses and streets, render bad times still worse, by inducing the feebleness of disease, and bodily inability to struggle against them. Threepence weekly,—*i. e.*, one penny-halfpenny per week for a constant supply of pure water ; one penny per week for drainage and house cleansing ; one penny, in round numbers, for a more effectual street cleansing and watering, per house, or per family of five,—would be a highly advantageous means of reducing, by prevention, the insurance charge for the mitigation of the effects of sickness and premature mortality, which for an average family would, in the present state of things, be rarely less than one shilling and five-pence weekly.*

Throughout this report the weekly charges have been stated, not for the purpose of disguising the large outlay which will be required, or the annual rentals ; but in order that the annual rental, as well as the immediate outlay, which is to last for years, may not, as is commonly done, be fallaciously set against the daily and weekly convenience and economy.

We now come to the estimates of expenditure, and the expenses of management, and probable net returns, for the consideration of shareholders.

There are as yet no accurate surveys of the town and neighbourhood of Leicester ; and therefore only proximate estimates can be presented as made by Mr. Hawksley, the engineer of the Nottingham Water Works, on an inspection of the town and neighbourhood. The estimates of the expense of the works for the collection of the sewer water and its distribution over the land, are submitted as maximum estimates, for an outlay to be applicable to a much larger quantity of land, as the demand for such manure extends.

It appears that the total amount of capital required for the construction of the complete set of works to effect the objects in question in Leicester, would be, for

* Vide Sanitary Report, p. 225.

Water Works	£69,000
Street Sewerage	30,000
House Drainage	10,000
Irrigation	40,000

Total . . .	£140,000

The first outlay for a complete system of water works would be about threepence per week on every house in the town: for a complete system of drainage, and maintaining it in efficient action, about half that amount; and for the service of an effectual system of street cleansing, by the use of water and the machine, about a penny-halfpenny per week for each house. The charges for the water supplies might be equitably distributed, as shown in the following table, in which may be seen the amount of payment for fixed charges, which must be thrown upon the middle and higher classes of houses, by any exemption or delay of contribution, from the lower classes of houses in return for works effecting reductions of their existing taxes and conferring other benefits.

Total No. of Houses of each class in Leicester, as rated to the poor's rate, not exceeding £.	Number	Per cent. of each class to the total	Weekly rate or contribution of each class of houses for				
			No. of Houses.	Water supply.	House and main Drainage.	Road watering and street cleansing.	Total weekly charge.
5	7322	57 $\frac{7}{10}$		1 $\frac{1}{2}$	1	$\frac{1}{2}$	3
10	2899	22 $\frac{8}{10}$		2	1 $\frac{1}{2}$	1 $\frac{1}{2}$	5
20	1397	11		3 $\frac{1}{2}$			
30	482	3 $\frac{8}{10}$		5			
40	232	1 $\frac{8}{10}$		6 $\frac{1}{4}$			
50	128	1		7 $\frac{1}{2}$			
60	72	6 $\frac{6}{10}$		9			
70	40	3 $\frac{3}{10}$		10 $\frac{1}{2}$			
80	45	4 $\frac{4}{10}$		11 $\frac{3}{4}$			
90	22	2 $\frac{2}{10}$		1 0 $\frac{3}{4}$			
100	13	1 $\frac{1}{10}$		1 1 $\frac{1}{2}$			
110	9	7 $\frac{7}{100}$		1 2 $\frac{1}{2}$			
120	8	6 $\frac{6}{100}$		1 3 $\frac{1}{2}$			
130	1	8 $\frac{8}{1000}$		1 4 $\frac{1}{2}$			
140	1	8 $\frac{8}{1000}$		1 5 $\frac{1}{4}$			
150		1 6 $\frac{1}{4}$			
160	1	8 $\frac{8}{1000}$		1 7 $\frac{1}{4}$			
170		1 8			
180	1	8 $\frac{8}{1000}$		1 9			
			12,673				

Proportion which would require house drains, &c. not ascertained.

Nearly the same.

Under 1s. for all three.

Manufactories, Breweries, &c. 3d. per 1000 gallons.
Average per week for each house. 2d.

If all the houses under £10 were excluded from contribution, and the interest on the whole amount of the fixed capital and establishment charges for the supply of water were charged on the middle and higher classes, or on those inhabiting houses above £20 per annum, then the payment, to be fairly remunerative, must be required in some such proportions as hereunder stated—

	£20 to 40	£40 to 60	£60 to 80	£80 to 100	£100 & upwds.
	d.	s. d.	s. d.	s. d.	s. d.
Weekly charge about	8	1 5	1 11 $\frac{3}{4}$	2 4 $\frac{3}{4}$	3 0
Instead of	5	0 8 $\frac{1}{2}$	0 11	1 1	1 5 $\frac{1}{2}$

There must also be a large increase, though not in the same proportions of the same rates for street sewers.

For the complete execution of the two out of the three parts of the set of works, the Company ask a net return to the capitalists of six per cent.

The works for the relief of the river and canal from pollution, and for the application of the refuse to agricultural production, it will be acknowledged, justly demand distinct payments for their use.

APPENDIX.

EXTRACT from a letter received from J. RANALD MARTIN, Esq., one of her Majesty's Commissioners for Inquiry into the Means of Improving the Health of the Inhabitants of large Towns and densely populous Districts :—

“ I have looked over the draft Report for the improvement of Leicester; and, from my personal acquaintance with the wants of that town, I feel assured that any separation of the two great parts of the machinery, would certainly frustrate the best attempts at improvement. We have now abundant experience, that where the arrangements for the water supply are separated from those of sewerage and cleansing, all future endeavours at adaptation are rendered additionally expensive, and so troublesome, in fact, as to be impracticable.

“ I hope the intelligent inhabitants of Leicester will concur in supporting a comprehensive course.”